# Evaluation of the Latin American Aquaculture Network

A Report to the Office of Planning and Evaluation,
International Development Research Centre

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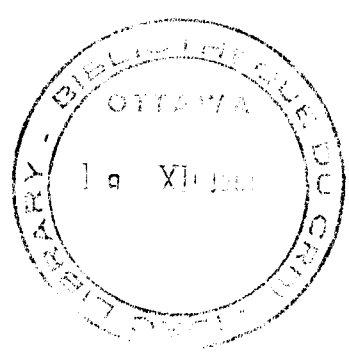

## TABLE OF CONTENTS

# 1. EXECUTIVE SUMMARY

This evaluation was undertaken to review the aquaculture network in Latin America in order to provide feedback to AFNS on how to improve support to the network and to assist in planning future programs. As well the review sought to highlight the lessons learned about the application of the network mechanism in the delivery of IDRC support. The methodology used included interviews with researchers and directors of research institutions, a review of IDRC documents and databases and an analysis of bibliographic references.

In Section 3, summaries of the interviews reveal that the predominant strengths of the network are in the areas of knowledge acquisition and information exchange. This is achieved through exchanges of information and personnel among projects, the planning of regional training, publication of a newsletter and the organization of theme-specific working groups. Reviewing the impact of training provided by the network, the interviews indicate that, as recipients applied the knowledge acquired, an increase resulted both in the production of fingerlings and in their survival rate. Suggestions by the participants for improvements in the network mechanism are included.

In Section 4, evidence is offered suggesting that the coordination costs for information and dissemination, are as much as one-third lower when this function is provided through the network mechanism than to individual projects without a network. The methodology used to quantify network activities was developed for the project, and is described fully in Appendix F.

Section 5 contains further analysis of the interview responses on the subject of sustainability. There is analysis and discussion of the major themes emerging from the interview responses: appropriateness, awareness, de-isolation, rationalization. The influence of the political, economic, and social context within which the network operates is discussed. In the Colombian case, the network is seen to reinforce the government's shift towards a more open process of decision and policy making.

Section 6 looks at how the network mechanism contributes to the development of research capacity. An attempt is made to quantify the "network effect" through comparison of bibliographies from articles about aquaculture, before and after the establishment of the network. The results indicate a marked increase in the number of articles cited in the bibliography and an increase in the proportion of articles about Latin American research.

This study suggests that the absence of identification at the outset of the likely duration of donor support is seen as an obstacle to the network's ability to plan its long term future. Sustainability requires planning for the termination of support. By avoiding the sustainability issue, the planning time frame takes a short term view and does not develop the infrastructure and support base required in the absence of a single external funding source. The case lends support to the 1980 report by Drs. Nestel, Hanchanlash, and Tono regarding the importance of indicating from the outset the length of support to be provided by the donor agency. There is some evidence that for a network to establish relationships that will endure in the absence of external funding for coordination, at least 7 to 10 years of support is required.

Additional background to the development of the networks and the activities supported are contained in Appendix A. Additional information on the interview process is included in the other appendices.

# 2. INTRODUCTION

IDRC's objective is to "initiate, encourage, support and conduct research into the developing regions of the world and into the means for applying and adapting scientific, technical and other knowledge to the economic and social advancement of those regions."

At the program level, one way in which IDRC's objective has been fulfilled is by supporting research networks. A network can be defined as: "a group of individuals or organizations that share common interests and exchange information in various forms on a regular or organized basis" (Akhtar, S., p.2).

In the field of international development research, IDRC is one of the largest actors in creating networks. In view of the considerable resource dedicated to these activities, it is important to determine how effective the network mechanism has been, whether the current approach to networking might be improved, and if so, how?

This study of the Colombian national aquaculture network and the Latin American regional aquaculture network was developed for the AFNS Fisheries Program and for Centre management interested in evaluating the network mechanism as one option to deliver program support. The evaluation provided an opportunity for Lisa Moreau, Intern, to acquire skills and knowledge in evaluation and development. The questions asked had two specific aims:

- To provide feedback to AFNS on which to base future support for the Latin American aquaculture networks.

- To highlight for the Centre the lessons learned about the application of the network mechanism in the delivery of IDRC support.

## 2.1 Methodology

The principal networking activities undertaken by the Colombian national network and the Latin American regional network are:

- the publication and distribution of a technical newsletter on aquaculture;
- the organization of national meetings for researchers, and the subsequent publication of research discussed at the meetings;
- the creation of working groups that meet regularly to review specific aquaculture research topics;
- the provision of training courses on aquaculture production.

To obtain information and opinions about the operation of the networks, interviews were conducted with 27 participants: the regional coordinator, the Colombian coordinator, directors of four aquaculture research stations, 14 researchers from both the university and government-supported research sectors, two research consultants, and five government employees involved in a range of activities such as planning and policy making for the aquaculture sector and umbrella institutes for scientific research.

The study addressed three broad areas:

1. cost-effectiveness and efficiency;
2. sustainability; and
3. the network's contribution to national research capacity.

In each of these areas, key concerns were identified and elaborated in the interview guides for exploration with the appropriate interviewees.

Separate interview guides were designed for: network coordinators, directors, and researchers. These are found in Appendix B in English and in Appendix C in Spanish. The interviews were conducted by Lisa Moreau, intern, in Spanish; Dr. Armando Hernandez, the regional network coordinator, gave generously of his time, setting up and attending the interviews, and providing translation as required. All but two of the interviews were conducted in Colombia. The other two took place in Brazil, where it was also possible to observe a Brazilian working group meeting and review documents in the library at CEPTA (Centrao de Pesquisa e Treinamento en Aquicultura) .

Documents available in Ottawa were also reviewed, and data from IDRC's PINS, PROMIS and FINMIS databases were collected to develop two ratios in an attempt to quantify the "network effect". The first ratio measures efficiency, while the second measures the cost of knowledge acquisition activities. The ratios are calculated on groups of projects, some within a network and some outside of a network to provide a basis for comparison.

Performance indicators were developed, but time was not available to collect this data at the interview sessions. Also, a written survey was developed but not used in the evaluation. These are provided as Appendices D and E respectively for consideration in any future monitoring or evaluation activities.

## 3. FINDINGS

This section attempts to summarize and categorize the answers given in response to the following questions, which address the issues of the benefits and shortcomings of the networks:

- From the perspective of researchers and others involved in network activities, what are the strengths and weaknesses of the network? and

- What action is required to maintain the strengths and to overcome the weaknesses?

In response to the questions related to effectiveness, 98 of the responses referred to strengths or benefits derived from the network.[1] These responses can be grouped into three general categories:

- Information dissemination (53 responses)
- Planning and coordination (22 responses)
- Provision of training (23 responses)

Each of these categories is discussed in more detail below, followed by a list of recommendations for improvements put forward during the interviews. Two other topics surfaced regularly during the interviews, and deserve special attention:

- Working groups
- New themes for the network agenda.

These are also discussed in more detail later in this section.

### 3.1 Information Dissemination:

In this category, two major benefits were identified by many respondents. First, with 35 responses was the increased publication of research results. Prior to the creation of the network, research results frequently went unpublished, whereas now the network newsletter and publishing program ensure that results are more widely and regularly disseminated.

Second, with 18 responses, was the importance of fostering links among individual researchers, research institutions, and relevant government agencies. These links emerge from activities such as the network sponsored national meetings and training courses which provide opportunities for researchers from different settings to come together to share their respective research interests.

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[1] The analysis does not always distinguish between the two networks. Responses tend to reflect the participants' views about the Columbian national network rather than the regional network, which was established more recently. Appendix A provides a brief history of the development of the two networks.

### *3.1.1 Recommendations on Dissemination:*

The interviewees put forward the following recommendations to strengthen the information dissemination function of the network:

i. Develop more effective links among libraries of research institutions for the purpose of providing interlibrary loans of aquaculture information. Make available a microfiche of library holdings across the region.

ii. Provide a directory listing such information as: researchers and their specializations, research institutions, on-going research in the region, and how to contact people working in the areas of interest.[2]

iii. Continue to provide more opportunities to publish results and disseminate information.

iv. Increase the frequency of the newsletter to four times a year, and increase its circulation.

v. Expand the newsletter's editorial mandate to cover issues such as socioeconomics and marketing in addition to the scientific and technical topics.

## 3.2 Planning and Coordination:

The role of the regional network coordinator in providing advice to research institutions and government policy makers was identified as a major strength of the regional network. It was noted that the coordinator was in a unique position to be informed by the experience of other countries in the region.

In Colombia, improved relations between institutions were attributed to the existence of the national network. This improvement was facilitating planning of research both at the institutional and the national level.

At both the regional and the national level, the activities of the network were also seen to have contributed to the rationalization of research programs as institutions are brought into contact with each other. The contacts help to eliminate duplication and to identify gaps in the countries' aquaculture programs.

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[2] Despite the improved flow of information brought about by the networks, the researchers interviewed were unaware that a database of aquaculture researchers based in Latin America is being developed at the regional network headquarters. The speed at which this database will be completed is limited as there is only one computer available for all regional network business, including the database work.

### *3.2.1 Recommendations on Planning:*

The interviewees identified the following actions by IDRC and/or the network which would further enhance research planning (listed in decreasing order of frequency of response):

i. IDRC should clearly indicate the length of time it intends to provide support for the network.

ii. Identify the aquaculture resources (researchers, institutions, specializations, equipment) available in each country. This would enable institutions to compare resources and develop exchange of knowledge between research stations.

iii. Increase the number of countries that are represented on the Technical Consultative Committee (TCC), and provide increased support for TCC meetings. Lack of resources has meant that the TCC has been able to meet only once since it was established in 1989.

iv. The regional network should provide advice to countries on the process involved in establishing and strengthening national networks.

## 3.3 Provision of Training

The training courses provided under the auspices of the regional network were seen as a major benefit. Prior to the establishment of the network some training was provided by the government, but this was not generally accessible to non-government researchers. Interviewees felt that the training courses were effective and were targeted to the right people.

Some benefits of the training program are quantifiable in terms of productivity as measured by increases in the production and survival rate of fingerlings. Of the 27 people interviewed, seven had taken the regional course on reproduction sponsored by IDRC and provided at CEPTA in Brazil. These interview participants discussed the results of the course in terms of the changes in the production of fingerlings achieved upon applying the knowledge at their respective research stations.

The results are summarized in Tables 1 and 2. Table 1 shows the increases, reported by the trainees, in the levels of fingerling production before and after training. Table 2 compares the survival rates for fingerlings for those stations where this information was readily available. In summary, both tables indicate positive effects of the training on research station productivity.

**Table 1: Comparing changes in fingerling production pre- and post-CEPTA reproduction course**

| Station | Changes in Fingerling Production | | Increase in Number of Producers Served, from: |
|---|---|---|---|
| | Pre-Network | Post-Network | |
| Huila Dept., Agricultural Secretariat | 550,000 | 800,000 | 450 to 800 |
| Magdalena Station | 0 | 17,000 | not available |
| Estacion Piscicola de Lorica, CVS* | 120,000 | 400,000 | not available |
| Univ. de Cordoba** | 120,000 | 300,000 | not available |
| CAR | 400,000 | 2,000,000 | not available |
| CVC | 200,000 | 500,000 | 750 to 1,500 |
| Univ. de Caldas | 500 | 3,500 | 300 to 450 |

* ***Increase from 3 to 5 professional workers and 4 to 10 support workers***
** ***Increased breeding season from 3 to 9 months; increase in number of professional workers from 4 to 6 and in number of support workers from 4 to 12***

**Table 2: Comparing changes in survival rates (% of fingerlings) pre- and post-CEPTA reproduction course**

| Station | Pre-Network | Post-Network |
|---|---|---|
| Huila Dept., Agricultural Secretariat | 10% | 40% |
| Univ. de Cordoba* | 30% | 90% |
| CVC | 8% | 35% |

* ***Increased breeding season from 3 to 9 months; increase in number of professional workers from 4 to 6 and in number of support workers from 4 to 12.***

When asked which components of the course were relevant to increasing production, seven respondents indicated changes that were implemented as a direct result of attending the training course at CEPTA. These are given in Table 3.

**Table 3: Changes applied on return to research station after training**

| Component changed | No. of respondents who made each change |
|---|---|
| Change incubator model from cylinder type to cone type | 7 |
| Adapted lab set-up to match set-up used by CEPTA | 4 |
| Applied larvae feeding practice | 2 |
| Varied pond densities and species combinations | 2 |
| Applied endocrinology theory | 1 |

An incidental benefit of the training program was that it provided another opportunity for researchers to meet, exchange information and establish contacts for the future.

### *3.3.1 Recommendations on Training:*

All respondents, whether they had received training or not, commented on ways to improve training within the network. In descending order of frequency of mention, the major recommendations were:

i. Introduce a course to teach formulation and management of cooperative agreements between institutions. This would increase inter-institutional cooperation, encouraging the sharing of resources and helping to eliminate duplication of effort.

ii. Provide follow-up to the training received at CEPTA to determine if the knowledge acquired has been applied in the field, and how effective it has been.

iii. Provide more training on adapting technologies. This should include the possible adaptation of technologies from other regions, e.g. Asia.

iv. Provide additional scientific equipment at CEPTA to be made available for its training courses.

v. Develop methods to ensure that the knowledge acquired on regional training courses is disseminated at the national level. One suggestion was that those who had received training should be encouraged to provide training themselves in their respective countries. This was seen as the next step required to increase national research capacity, and would lead to an increase in ability to teach the transfer of technology.

## 3.4 Working Groups

There are at present three specialized working groups established under the auspices of the regional network. They deal with research related to collosoma culture, mollusc culture, and seaweed. Many of the researchers interviewed regard both the working groups and the training courses as part of the same process: the acquisition and dissemination of knowledge. As with the training, interviewees stressed the additional benefit offered by the working groups of direct contact with fellow researchers. They felt however that some improvements could be made. These are listed below.

### *3.4.1 Recommendations on Working Groups*

Several respondents had suggestions for improvements in the working group structure. These are listed in decreasing order of frequency.

i. Limit the size of working groups. Despite the apparent contradiction with the stated benefit of contact with other researchers, it was felt that smaller groups could be more effective. In the past some group meetings had involved 40 or more participants.

ii. Increase the number of meetings.

iii. Create working groups at the national level in each participating country. Representatives of the national groups would then attend the regional working groups, providing an additional mechanism to that of the TCC to advise the regional network of common weaknesses in need of attention.

iv. When follow-up actions are required as a result of working group meetings, allocate responsibilities to specific institutions to ensure that there is no duplication of effort.

v. Prepare an agenda for each working group meeting in advance and circulate it to participants. In the Colombian experience, respondents reported that when working group participants took ownership of the agenda, and began setting their own goals, the result was greater collaboration among researchers; it was felt that this collaboration has the potential to outlive the formal mechanism of the network.

### 3.5 New Themes for the Network Agenda

In the course of the interviews, respondents also identified a number of shortcomings in the network structure, and presented suggestions for new themes that might be addressed by the network to increase its usefulness to member institutions and individual researchers. Three new themes were mentioned most frequently. They are:

- the need to gain more expertise and to develop a strategy regarding marketing channels;
- economic issues related to production, such as cost of production and post-production technology;
- nutrition.

Other possible themes mentioned during the interviews included: standardization of research methodology, coordination of extension programs for small producers, larvae culture, culture systems, diseases, genetics, reproduction, cold water species, improved transportation of fingerlings, and the need to find new ways of funding network activities.

## 4. COMPARISON OF RESEARCH DELIVERY COSTS

To ascertain the cost-effectiveness of research project funding through the network mechanism an attempt was made to compare the cost of delivering the benefits identified in the interviews within and outside of the context of a network.

Section I of this report indicates that researchers and directors find network activities in the areas of acquisition and dissemination of knowledge (publishing, training, working groups) to be among the most beneficial. What is the cost of providing these benefits through a network compared with the cost of research institutions attempting to obtain information on their own? Can a dollar figure be placed on the administrative costs to coordinate all network activities, and specifically knowledge acquisition activities? In an attempt to answer these questions, indicators were developed to compare the non-network to the network situation. Appendix F provides details of the methodology and the formulas used to obtain ratios for comparison.

The results suggest that it is less expensive to deliver information and dissemination activities to projects within a network than to projects that are not within a network.

## 4.1 Methodology

The two indicators developed for this study take the form of cost ratios. The first indicator, the efficiency indicator, measures the overall IDRC project cost to deliver a dollar of IDRC research support. The second indicator, the dissemination-learning indicator, measures the costs of knowledge acquisition associated with delivering a dollar of IDRC research support.

Three groups of projects implemented between 1980 and 1990 were compared. All the projects are linked by network project 3-P-86-0144.

Group A projects are phase I projects which preceded the establishment of the network. Those projects that went on to a second phase within the network are assigned to Group B. Group C comprises projects within the network that were not preceded by a first phase.

The cost ratios for Group A are compared with Groups B and C for the "network effect." The comparison assumes that the projects began from similar start up points. However, when Groups A and B are compared (in Appendix F) this assumption is dropped because the Group B projects are the phase II components of Group A; it is assumed that Group B projects would have a lower cost even without the existence of the network because a certain amount of learning would have taken place during Phase I.

Four cases were prepared. In each, it is assumed that the network dedicates a different percentage of time to IDRC projects. This reflects the reality that networks often link a large number of research institutes in a particular sector, not just those carrying out IDRC-supported projects.

In every case, and for both indicators, the cost to deliver a dollar for research support is less for projects that operate within a network than for projects that do not operate within a network. The cost reductions are significant, ranging from approximately 60% to 75%, depending on the case used. The case given below (in Table 4) summarizes the cost ratios in a situation where 60% of the network's resources are dedicated to IDRC-supported activities.

**Table 4: Cost comparisons: Network and non-Network**

**Network contributes 60% of resources to IDRC-supported projects**

| | Cost to deliver $1 for research support | |
|---|---|---|
| | **Without network (Group A)** | **With network (Groups B & C)** |
| All expenses* | 6.82 | 2.17 |
| Learning-dissemination expenses only** | 2.42 | 0.65 |

* *all expenses to deliver $1 for research.*
** *training, consultancies, conferences, publications costs to deliver $1 for research.*

By looking at the different cases, it is possible to obtain cost ratios for different levels of IDRC project involvement in the network. The detailed cost ratios for all four cases are provided in Appendix F.

This analysis suggests that the network mechanism is not only an efficient means of delivering research support, as indicated by the researchers and directors during the interviews, but that it is also cost-effective. This is a tentative conclusion however. The approach should be challenged and refined, given that alternative methods of measuring network effects and efficiency are not apparent in the literature.

## 5. SUSTAINABILITY

The question posed to address the issue of sustainability was: What type of IDRC support will assist the network to achieve an autonomous status in the future?

Autonomous status implies that the network members find some way to generate ongoing financial support for network activities–independent of any single funding source–and that the collaboration between institutions initiated by the network extends beyond the donor support for the network.

Questions on sustainability were frequently met with hesitation because they were interpreted as a signal of possible loss of funding from IDRC. As a result, participants did not bring forward ideas on network activities required to bring about an autonomous network.

A consistent message, however, was that the regional network has not yet developed to the point where the full benefits of networking have been experienced. Therefore, a judgement at this time of how to sustain the network is premature. In its current state, it was difficult to imagine how the network could sustain itself without donor support.

The regional coordinator and a number of interview participants indicated that knowing the duration of donor support is important to establishing the network agenda. Member research institutes need to be aware of the time frame if they are to make commitments. The network agenda is a motivating force.

In essence, the argument is that sustainability must be planned for. The literature recommends that the support to a network be defined from the outset, but the commitment made by IDRC in 1986 did not indicate a termination date for support. Because the length of support is not discussed then the question of the network's sustainability following termination of support did not arise. Hence, the planning of the network's activities did not include the creation of the infrastructure to facilitate the network's transition to alternative forms of support in future.

Both the data and the views expressed by those interviewed indicate that the evolution of the network as a regional mechanism of exchange is a gradual process. Researchers said they were forging links with other researchers with whom they were brought into contact through the network. However, these links are at the stage of information exchange at this point. Shared research problems are being discussed in the working groups, and actions are just beginning to emanate from such discussions. A judgement of the extent to which members will become interdependent cannot be made at this time.

The regional coordinator hypothesized that seven-to-ten years is the minimum time required for a network to establish relationships among institutions and researchers that will endure in the absence of a formal coordinating mechanism. These relationships can take the form of discussions among researchers, exchanges of information, sharing of resources, and dividing work on research projects among institutions.

An article by Winkelmann suggests a three-type classification for networks based on their degree of integration:

- Type 1 is a network that facilitates information exchange.
- Type 2 builds on type 1 but adds meetings where professionals exchange ideas directly on jointly identified themes.
- Type 3 adds joint priority setting, planning, implementing and monitoring of defined undertakings, probably with some division and assignment of tasks.

Different levels of integration imply different degrees of resource commitment, and obligations. The network characteristics apparent in this case are consistent with the network typology provided by Winkelmann.

The strengths and benefits identified by the participants in the interviews indicate that the Latin American aquaculture network is a mix of types 1 and 2. The working groups, training courses, and the national aquaculture meetings are all elements of type 2 networks. Based on the qualitative information provided by the participants, there is support for the network to move towards the type 3 classification in future.

## 5.1 Network Strengths

The long-term sustainability of the network will depend to a large extent on the degree to which the strengths of the system continue to develop, and are perceived by the members to be valuable. Therefore, an attempt was made to analyze the strengths of the network mechanism based on the views expressed by the interview participants.

When the network strengths are grouped according to the kinds of benefits valued by the interviewees, the following themes emerge:

- appropriateness
- awareness
- de-isolation
- rationalization

Table 5 provides a breakdown of the frequency with which each occurred during the interviews.

**Table 5: Network benefits grouped by common themes**

| Theme | Number of times mentioned |
|---|---|
| Appropriate content | 32 |
| Increased awareness | 37 |
| De-isolation | 26 |
| Rationalization | 6 |

### *5.1.1 How Appropriate Is a Network?*

To determine the appropriateness (or lack of it) of a network, one must ask questions such as: Is the network agenda developed by representatives of research institutions in response to common weaknesses within the sector across the region? Is training designed to meet regional needs, and is it provided to the right people on the right topics? Is the acquired knowledge successfully applied? Is the type of information gathered and disseminated relevant to the Latin American context?

Those interviewed stated that before the network was created, most of the aquaculture literature available in Latin America came from Europe, the US, and Canada. Thus, the literature published in Latin America tended to be based on foreign conditions. The network newsletter and the publication of working group results have improved this situation. Furthermore, because training provided brings together Latin American researchers directly, relevant experience is exchanged.

Respondents felt that the selection criteria were adequate to ensure that the right people attend the network-sponsored training courses. The criteria include a minimum of two years research experience in aquaculture and present employment within the aquaculture research field. An open process exists to apply to take the course because the training opportunity is advertised in the network newsletter.

### *5.1.2 How Does the Network Increase Awareness and De-isolation?*

Does the network provide advice and information about strategies and techniques tried in other countries? Does dissemination resulting from increased interaction among researchers lead to an increased awareness of what is happening, where and who to contact? Does this knowledge become an input into the research process? Does the situation of researchers change when they are put in touch with researchers in other centres that are involved in similar types of research? One constraint to communication is a lack of funds. Are research institutions less likely to compete for scarce resources, and more likely to seek opportunities to collaborate and work together when they become members of a network?

Researchers working in isolation may repeat the same error many times. However, acquiring more information on a particular problem can increase productivity, as the error is recognized more quickly, allowing the researcher to move on.

The benefit of the national and working group meetings, and training courses, goes beyond knowledge acquisition to include the direct contact established among researchers. For example, Dr. Beatriz Chaparo indicated that during the 1988 Colombian annual meeting she made contacts and they arranged to meet in future to work on joint research in red tilapia. Similar encounters and follow-up visits were reported by a number of interview participants. Many requested that the network provide improved services to facilitate direct contacts between researchers.

A distributed database system is required to increase awareness of what is being done where and by whom. Nohna Lopez Salgado, a Colombian marine biologist, explained that while she considers herself an expert in trout culture, with 15 years experience in the field, it was not until an article appeared in the newsletter that she learned that a centre which specializes in trout culture exists in Brazil.

### *5.1.3 How Does a Network Facilitate Rationalization?*

Does the existence of a network reduce the duplication of research efforts and lead to greater integration of research programs within a national or regional program?

Rationalization is the characteristic that appears least in the aquaculture case, perhaps since it is not a type 3 network. While the objective was not to create a type 3 network, support was indicated for the integration of some of the activities of member institutions under network auspices.

Those interviewed did not perceive rationalization as a strong characteristic of this network, although it was frequently mentioned that the network improves relations between institutions. However, in several respects this case exemplifies rationalization activities in the areas of both national and regional planning.

In the area of national planning, rationalization activities refers to the advisory services provided by the network coordinator and information provided through network publications that becomes part of the research planning process. Action recommended through the advisory service is drawn from the Latin American experience.

The regional coordinator is strategically placed to have access to information about the advantages and disadvantages of various Latin American approaches applied in the development of aquaculture and to transfer this knowledge between countries. IMARPE of Peru, the Catholic University of Chile, and the Brazilian government are among the institutions that have requested the coordinator's advice.

The advice provided by the regional coordinator helped Colciencias of Colombia to contact institutions outside the country involved in aquaculture and to assess Colombia's comparative strengths and weaknesses. This helped in determining the allocation of resources in the Colombian context.

Based on the observations of Colciencias and of researchers from Magdalena Station, the agricultural Secretariat of Huila Department, and the University of Caldas, the increased contact attributable to network activities has reduced friction between institutions which compete for the limited financial resources allocated by Colciencias. With the arrival of network activities, direct contact between researchers has led to an appreciation by researchers of the value of these contacts. Further, researchers suggested that mechanisms be put in place to facilitate even greater contact for the discussion of common problems, and of relative strengths and weaknesses. Through such discussions, resource allocation decisions can be defined rationally according to national goals, and the roles of each institution decided. For Colciencias, the resource allocation function has been simplified as it can now be based upon a national plan elaborated with the collaboration of the actors in the sector.

### *5.1.4 Rationalization and Regional Planning*

The Technical Consultative Committee (TCC) has met only once in two years, thus the actual impact of the Committee largely reflects the liaison of TCC members through the regional coordinator. The TCC is tasked with reviewing general conditions of aquaculture across the region, and based on these conditions, it recommends network priorities in research training and exchange. The role of the

TCC is important in the long run because it provides the only opportunity for directors of several institutions to come together, to analyze the regional status of aquaculture, and to diagnose solutions to common problems and weaknesses. It is at the level of the TCC that a commitment can be made for coordinated action. This function is substantially limited given that financial support for meetings has permitted only one meeting in the past two years.

A prerequisite for the network to move to type 3 (if this is considered desirable) is a strong planning capability. The planning capability will be only as successful as the ability of institutions to manage inter-institutional cooperation. Thus to evolve toward type 3 requires that certain infrastructure be provided by the network to facilitate exchange between research institutions.

The regional coordinator believes that strong national working groups should be a priority if the network is to generate ongoing collaboration. Strong working groups mean that members of the groups must commit time to the topics discussed by the group, since the agenda for subsequent meetings of the group is derived from the commitments made by individual members. These commitments imply that "ownership" of the group's agenda is taken by members. IDRC support to facilitate an annual regional meeting of representatives from the national working groups could be extremely effective in this context. This mechanism would be an additional means of decentralizing planning, eliminating duplication, and working towards greater integration of the research effort.

Juan Jose Plata Caviedes, an economist with the National University of Colombia, suggested IDRC might provide training on inter-institutional management and cooperation as a means to develop skills that support the sustainability goal. He suggested that studying the experience of NGOs on how they coordinate their agreements across Latin America might provide useful insights that could be applied to similar agreements among participating institutions in a research network.

## 6. CONTRIBUTION TO RESEARCH CAPACITY

To address the issue of contribution of the network to the development of national research capacity, the question which guided discussions was:

> *What activities or factors in the evolution of the network have contributed to the development of research capacity?*

The responses can be summarized in two statements which address the development of a national research capacity as a result of the network activities:

i) At the level of the individual researcher, there has been an increase in the capacity to apply aquaculture technologies through access to greater information and training.

ii) At the national level, the skills developed through participation in network activities include consultation and cooperation among actors within the sector.

## 6.1 Skills at the Individual Level

How can the acquisition of national research capacity be measured at the individual level? Given that the major strength of this network has been to increase information dissemination and exchange, an indicator was sought to measure the network's impact on publications about the aquaculture sector. To see if a correlation exists between the establishment of the network and researchers' output, a comparison was made of publications produced by the same researchers pre- and post-network. Articles by Colombian aquaculture researchers who had published both prior to and after the establishment of the network were obtained. The bibliographies from these articles were reviewed to see if there had been changes over this period.

The following tables indicate that there has been an increased use of sources within the Latin American region since the creation of the network.

The first analysis, summarized in Table 6, found that bibliographies in articles produced before the establishment of the network had fewer bibliographical references than articles published once the network was established. The number of articles increased by approximately 68%.

**Table 6: Comparison of bibliographies in articles by the same authors, pre- and post network**

| Item | Pre-network | Post-network | % change |
|---|---|---|---|
| Total number of articles cited in bibliographies | 62 | 104 | +68% |
| Average number of articles cited per bibliography | 15 | 26 | +73% |

Table 7 indicates that bibliographical references to articles about aquaculture in developing countries increased by 109% when the pre- and post-network articles are compared. In this category the increase in references to articles on Latin America and the Caribbean was 104%.

**Table 7: Comparison of article topics within bibliographies, pre- and post network**

| Topic | Pre-network | Post-network | % change |
|---|---|---|---|
| Scientific (region neutral) | 26 | 33 | + 27% |
| Developing country | 33 | 69 | +109% |
| of which: | | | |
| Latin America & Caribbean | 25 | 51 | +104% |
| Any developing region | 8 | 18 | +125% |
| Developed country | 3 | 2 | - 33% |

Table 8 shows that the proportion of articles in the bibliographies on developing country topics increased from 53% to 66%.

**Table 8: Comparison of percentage of articles cited by topic within bibliographies, pre- and post network**

| Topic | Pre-network | Post-network |
|---|---|---|
| Scientific (region neutral) | 42% | 32% |
| Developing country | 53% | 66% |
| Developed country | 5% | 2% |

Table 9 indicates that before the network, 40% of the articles cited were published in developing countries and 60% in developed countries. With the network these percentages have been reversed.

**Table 9: Comparison of articles within bibliographies, by location of publication, pre- and post network**

| Place of publication | Pre-network | | Post-network | |
|---|---|---|---|---|
| | No. | Pct. | No. | Pct. |
| Developing country | 25 | 40% | 61 | 58% |
| of which: | | | | |
| Latin America & Caribbean | 17 | 13% | 42 | 40% |
| Any developing region | 8 | 27% | 19 | 18% |
| Developed country | 37 | 60% | 43 | 41% |

Tables 6 to 9 suggest a correlation between the establishment of the network and an increase in access to more, and a broader spectrum of relevant bibliographic material from the region.

A further analysis of the bibliographies in the same articles revealed an increase in reference to more recent publications in the post-network case. Table 10 shows that, post-network, 62% of citations in bibliographies refer to material published since 1980. This is double the number of citations for the comparable period (1970-79) prior to the establishment of the network.

**Table 10: Comparison of percentage of articles cited in bibliographies, by date of publication, pre- and post network**

| When published | Pre-network | Post-network |
|---|---|---|
| 1960-69 | 21% | 4% |
| 1970-79 | 31% | 31% |
| 1975-84 | 54% | n.a. |
| 1980-present | n.a. | 62% |

## 6.2 National Capacity

The development of national research capacity demands the ability to generate political commitment. Such commitment can be strengthened by demonstrating that a strategic assistance to encourage the utilization of an under-developed resource can generate benefits within the country. By encouraging cooperation among research institutions, and showing positive results, the network facilitates and encourages political commitment to a strong national program.

In the case of the Colombian network, the national meetings helped to define the state of aquaculture and to identify goals based on the sector's strengths and weaknesses. The national meetings complement the broader political context, which finds the government trying to decentralize decision-making away from small committees within the Ministry of Agriculture and the Ministry of Planning to include more actors within the sector. Colciencias stated that, in the context of this movement, it too needed to restructure the way it operated in order to allow its decisions to be based on consultations at the local level. The network lends support to this process.

Although many of the network's identified strengths are now centralized in the coordination skills available at the network's centre, the process of decentralization has already begun. This is evidenced, for example, as the editorial committee for the newsletter, formerly composed entirely of Colombians, has invited the participation of new members from outside of Colombia.

The SIAAL database under development in the regional headquarters could become a shared activity by decentralizing the collection of data. Presently, information is collected from the entire region through this office.

Three of the Colombian interviewees–researchers from CVC, the University of Caldas, and a representative of the Ministry of Agriculture–stressed the importance of continuing the development of a national plan that would assign a focus for each institution. The definition of institutional focus is one way to prevent duplication.

In terms of national capacity evolving from a critical mass of researchers, there was no evidence to suggest that lack of an adequate number of researchers is the problem, except in the field of post-production research. Several interviewees suggested that the critical mass of researchers in this field is not available at the national level. However, the regional network could help to alleviate this situation by ensuring that the human resources available within the region are brought into greater contact.

# 7. APPENDICES

## Appendix A: Background:

The idea of a regional aquaculture network was conceived at a regional meeting of aquaculture researchers held in Brazil in 1984. Participants saw the network as a potentially effective way to respond to common problems in technology, operations and personnel. IDRC, which was already funding a number of individual aquaculture projects in the region, became involved in 1986 following discussions with the Colombian Fund For Scientific Research (Colciencias ). Colciencias wanted to strengthen Colombian aquaculture by developing mechanisms to coordinate activities among several Colombian institutions involved in aquaculture research. The objective would be to promote the development of aquaculture for small- and medium-scale producers by encouraging applied research on integrated aspects of cultivation, post-harvest handling and processing, economics, and marketing. It was envisioned that a small grants component within this framework would stimulate research groups in universities and other centres in Colombia to carry out research related to project activities.

During discussions with IDRC, it became apparent that the integrated approach envisioned for the Colombian national network might also be an appropriate approach for the development of a regional aquaculture research network for Latin American. The outcome was that IDRC approved grants in 1986 for both activities, under a framework that provided support for a Colombian national network as well as a Latin American regional network.

The 1984 Brazil meeting had recommended that, during the first two years of the regional network, a common approach to training, exchange and technical assistance was to be established by the network. When the first network coordinator was appointed at the end of 1986, responsible for both the Colombian and the regional networks, his mandate was to facilitate the exchange of information and personnel among projects in member countries, to plan a regional training program, and to publish a biannual newsletter.

The newsletter was first published in 1987 with 500 copies per issue. In 1990, three issues were published and 1500 copies of each were printed. The distribution now covers 218 institutions, 83 universities, and 753 researchers and producers based in 39 countries. In addition to distribution within Latin America, copies are distributed in Europe, Canada, the USA, and the Caribbean.

The regional network was located within Colciencias until 1987. However, it had by this time become apparent that the coordinator could not be equally responsible for both the national and regional networks. Thus, a national coordinator was appointed for the Colombian network, freeing the regional coordinator to concentrate on the developments at the regional level.

In 1988, a regional inter-institutional committee was created as a result of an agreement between Brazil, Colombia, and Panama. The Technical Consultative Committee (TCC), as it was named, was to work towards a regional planning capacity to increase the ability of the national aquaculture centres to respond in a coordinated manner to regional needs. IDRC approved a grant in 1989 to permit the transfer of many coordinating activities formerly conducted by the aquaculture network to this committee. Membership of the TCC is made up of representatives of CEPTA (Brazil), Colciencias and Inderena (Colombia), Austral University (Chile), and Dinacc (Panama). It was originally anticipated that the TCC would meet annually to analyze the status of aquaculture development, to establish regional research priorities and to complete the annual work plan. It met in May 1989 and a second meeting is scheduled for 1991.

Three working groups on Collosoma Culture, Mollusc Culture and Seaweed were established. These groups were established to analyze the status of each of these areas of research by country so that a regional work plan could be established. The results of two working group meetings, on Collosoma and Mollusc, have been published. The Network Coordinator indicated that these publications are the only publications in Latin America that bring together the results achieved by different countries in these areas.

The training courses in fish reproduction have been provided annually at CEPTA in Brazil since 1986, to researchers from across Latin America.

Development of an aquaculture information system, known as SIAAL, began in July 1990 at the regional network office in Bogota, Colombia. It will consist of three components: information on researchers, such as their area of specialization, publications, research interests; information on aquaculture research stations; and a bibliographic section providing a list project results, books published, and articles on aquaculture.

The national Colombian network coordinated national meetings for each of 1987, 1988, and 1989. A 1991 national meeting is planned. Attendance numbered 70 in 1987, 200 to 250 in 1988 and 250 to 300 in 1989.

The first national meeting (1987) brought together, for the first time, different Colombian actors within the sector, including producers, researchers, and government planners. Extension workers did not participate. The main conclusions of the meeting were that it was important to identify the actual status of aquaculture in Colombia. Subsequently, an analysis of national aquaculture activities was carried out, coordinated by Colciencias and the Ministry of Agriculture, based on the contacts made during the meeting.

The second national meeting (1988) attempted to analyze how aquaculture contributes to rural development. Here, attention turned to the issue of rural extension and to the problems encountered by researchers. Participants at this meeting included extension workers and representatives from the aquaculture sector of neighbouring countries. This involvement was one of the factors that led to the creation of the TCC.

At the third national meeting (1989), each participating Colombian institution was required to present its strategy for the 1990s. The Ministry of Agriculture, the National Planning Department and the regional network, also presented their respective strategies for the 1990s. From these presentations, discussions followed with the aim of coordinating the 1990s agenda in the area of training, extension, and research.

The 1991 meeting will involve the presentation of a national plan for aquaculture for the 1990s, based on the input of the 1989 meeting and the consultations that have occurred since then between institutions, the Ministry of Agriculture (Colombia), Colciencias and the National (Colombian) Planning Department. Feedback on this plan is the main objective of this meeting.

# Appendix B: Interview Guides - English

## INTERVIEW GUIDE: QUESTIONS FOR RESEARCHERS:

### Effectiveness/Efficiency:

1. What type of contact do you have with other researchers? (ie. do you coordinate your research effort; do you share results; do you brief each other in new techniques\findings)

2. Did the network provide the first opportunity for you to work through your institution with researchers in other institutions? What type of interaction did you have with researchers in other institutions before the network was created? Would you say this cooperation increased when the regional network was created in Latin America?

3. What part(s) of the network program are relevant to your needs and why? (ie. training, specialized working groups, collaborative research projects, contributing to the newsletter, discussion, research sharing, dissemination)

4. Of the activities you found valuable, were they activities which were available to you prior to the establishment of the network?
   Can you tell me about the pre-network activities?

### Sustainability:

5. There are some disadvantages to external funding such as cutbacks, its short term characteristic. Do you think it would be worthwhile for members to fund the network? What ways could be found to generate the funds needed?

### Contribution to National Research Capacity:

6. Since the network was created, what changes have resulted in the work you do, in terms of the information you have access to?
   .... in terms of the research projects that are worked on?
   .... in terms of the time allocated to projects that are network or non-network related?

7. How has the cooperation between institutions changed since the network came into existence?

8. What type of things could the network do in future that would improve the research your institution can do to meet the needs of the farmers you serve? (ie. increase dissemination, make more links with policy makers)

**Questions for researchers involved in a specialized working group of the regional network:**

**Efficiency:**

9. What was useful from your experience working with the network working group? (ie. discussion on methodology, more information and better dissemination, strength of the research team)

10. If you participated in future working groups, what would you suggest be done differently? (commitment, specific agenda)

11. What effect has your participation in the group had on your institution? (What new skills did you acquire that you will transfer to others in your institution; what information has been introduced that the institution can build on; etc)

**Research Capacity:**

12. Does the opportunity allow you to help create results that your institution would find difficult to achieve in the short run given its present level of human and operating resources?

Summing up, what is your overall assessment of the network, what do you find to be the network's greatest strengths and greatest weaknesses? What would you propose to overcome these weaknesses?

# INTERVIEW GUIDE: QUESTIONS FOR DIRECTORS OF INSTITUTIONS

## Questions as per Regional Aquaculture Network

### Effectiveness/Efficiency:

The Network was set up to respond to common problems experienced by institution's across Latin America, in technology, operations and personnel. To address these, the Network framework was to achieve a number of things: to facilitate the exchange of information and personnel; to complete regional planning and to provide training and technical assistance.

1. Comparing the impact of different activities that the network is engaged in, are some activities less important and others more important and why?

2. a. What kinds of research problems have you brought to the Network and how were these dealt with?
   b. What kinds of financial problems .....?
   c. What kinds of administrative problems .....?
   d. Did the network deal with these?

3. What effect has the Network had on the dissemination of research results compared with the system in place before the network?

4. Based on your experience in this network, what advice would you give to others about setting up a network, in terms of what is needed so that it will work? (ie. do members need to share common research areas or experience common problems)

### Sustainability:

5. There are some disadvantages to external funding such as cutbacks, its short term characteristic. Do you think it would be worthwhile for members to maintain the network? What alternative funding mechanisms would you propose?

6. Over the past year what has your institution contributed to the network? Could you put a dollar figure to this support and/or estimate the time in person years of this support?
   (interpret financially, providing speakers for training, providing participants at activities, providing articles to the newsletter, providing your facilities for training, providing researchers in collaborative effort.)

7. Did the network introduce an administrative burden on your institution? If yes, did the benefits outweigh the costs?

8. Did the cost of training to your institution go up or down since the network was created? Why did the cost go up or down? If the cost decreased what are you able to do with the savings?

9. What effect did network activities have on the national or regional recognition of your institution? How did this come about?

10. What role do you see for the network to play in the next 5 years?

**Contribution to Research Capability:**

11. What collaborative research is your institution involved in both within and outside the network? What type of cooperation do you have outside of the network? Is this cooperation different than the cooperation between institutions within the network?

12. Are there areas of research that your institution could not do fully on its own that are now being done through collaboration within the network?

13. What effect has the network had on policy making and implementation? If the network had not existed, would some policy decisions be different? What instances can be cited in the past two years that show the policies of your government have been influenced by your institution's participation in the network?

14. What effect do present activities within the network have on the institution's autonomy in terms of making it less dependent on the government's programs or are some governments objectives met through the network?

15. What effect has the network had in the development of your institution? Has the agenda of your institution been changed since the network was created? If so, how? (ie. level of skills, access to information or technology, increased reputation of your institution in contact with other institutions)

    If possible give numbers to indicate the changes, ie compare the year before the network to last year, for the following:
    - # of projects undertaken
    - # of new areas in which research is occurring
    - # of training programs attended
    - # of staff that have participated in the training

16. Are there indications that participation in the network has altered your institution in any way?

Questions relating to the Technical Consultative Committee (TCC) and Network relationship:

**Efficiency:**

17. How well do the network activities correspond to the interests identified by the coordinating committee?

18. Given the network administration is done by the Network Coordinator, how does this benefit the TCC?

19. How has your institution contributed to the Committee's agenda? How does the TCC define its goals?

**Question as per Colombian National Aquaculture Network:**

20. What lesson from the regional network experience were applied in the creation of the local Colombian network?

21. How is the Colombian network different from the regional network? What needs does it respond to? Why could these needs not be met at the regional level?

22. Does the Regional Network Coordinator affect the Colombian network? How do these two networks interact?

23. How well are your interests met through the network? Is the network giving you what you expected to get out of it?

## Interview Guide: Questions for Regional Network Coordinator:

### Efficiency

1. What is the major objective the network was set up to achieve? Have you been able to meet this objective? How long did it take/at what point are you now? How much longer will you need to reach the objective?

2. Did the objective correspond to the expectations of members? What need or demand of each institution is not being met?

3. What problems has the network encountered?

4. How has the structure of the network changed since its beginning? Why did the change come about?

5. Based on your experience, which aspect of setting up the network program was most difficult? To address this difficulty, what advise would you give to others setting up a network?

6. Do you keep track of each institutions participation in the network: ie. number of researchers that participated in each training; articles submitted to the newsletter; correspondence between each institution and your office; etc.

7. How do you allocate your time to deal with network business? How would you like to reallocate your time? Do some areas require more attention and other areas less attention?

8. The position of Network Coordinator is based in Colombia. Given the geographical differences, would an alternative arrangement better serve the network coordination requirements?

### Sustainability

9. Ideally, 5 to 10 years from now, what would you see the network doing?

10. Assuming IDRC funding runs out by then, how might these activities be supported? Do you think it would be worthwhile for members to maintain the network? What alternative funding mechanisms would you propose?

### Research Capability

11. Does each institution participate differently? Could you highlight how each contributes? Do some contribute more or less?
What do they get out of this? Looking at the pattern, do you think this will change? Does this system work well?

12. What are some of the advantages and disadvantages of collaborative programs occurring between institutions at different levels of development?

13. Would you recommend different ways for institutions to participate according to their strengths/weaknesses? What has the network done to accommodate these differences?

14. To what extent has the network influenced the government's agenda/policy issues?

15. How does the network put forward a regional plan? Would this happen without the network?

16. Why was the National Colombian Network set up? What needs were not fulfilled at the regional level that will be fulfilled at the national level?

17. What is the role of the regional level compared to the role of the national level network? What is the relationship between these networks?

18. Is the creation of the National Colombian Network a reflection of the needs which a regional network could not address?

**Relationship to Technical Consultative Committee (TCC)**

19. What role does the TCC play in the Network?

20. What is your relationship to the TCC?

21. How does the TCC see its role in the long term and does this role depend on the network in any way?

22. How might the responsibilities of the network and the TCC change in the next 5 years?

Summing up, based on your experience, what conditions are required for a network to succeed?

# Appendix C: Interview Guide - Spanish

**Guía para la entrevista: preguntas para investigadores:**

Preparación:

¿En qué tipo de investigación participa Ud.?

Eficacia/eficiencia:

1. ¿Qué tipo de contacto tiene con otros investigadores? (¿coordina su esfuerzo investigativo; comparte sus resultados; intercambia información con colegas sobre nuevas técnicas y resultados?).

(1) 2. **¿Le proporcionó la red la primera oportunidad para que trabajara a través de su institución con investigadores en otras instituciones? ¿Qué tipo de interacción tuvo con otros investigadores en otras instituciones antes de que la red fuera creada? ¿Diría Ud. que esta cooperación aumentó cuando fue creada la red regional en América Latina?**

(2) 3. **¿Qué parte o partes del programa de la red son pertinentes a sus necesidades y por qué? (capacitación, grupos de trabajo especializados, proyectos de investigación colaborativos, contribuciones a un boletín, debates, compartir investigaciones, difusión).**

4. De las actividades que encontró valiosas, ¿estaban éstas disponibles para Ud. antes de que se estableciera la red? ¿Podría decirme algo acerca de las actividades que se llevaban a cabo antes de la existencia de la red?

Sustentabilidad:

(3) 5. **La financiación externa presenta algunas desventajas tales como las reducciones de presupuesto y el corto plazo de su duración. ¿Piensa que valdría la pena que los miembros financiaran la red? ¿Qué medios podrían encontrarse para obtener los fondos necesarios?**

Contribución a la capacidad investigativa nacional:

(4) 6. **Desde que fuera creada la red, ¿qué cambios se han producido en el trabajo que realiza desde el punto de vista de la información a la que tiene acceso?**
**...¿desde el punto de vista de los proyectos investigativos en los que se trabaja?**
**...¿desde el punto de vista del tiempo asignado a los proyectos que se relacionan o no con la red?**

7. ¿Cómo ha cambiado la cooperación entre instituciones desde que se creara la red?

**(5) 8. ¿Qué tipo de cosas podría hacer la red en el futuro con el fin de mejorar la investigación que su organización puede hacer para satisfacer las necesidades de los campesinos a quienes presta servicio? (por ejemplo, aumentar la difusión de resultados, establecer más vínculos con formuladores de política).**

Preguntas para investigadores que participen en un grupo de trabajo especializado de la red regional:

Eficiencia:

**(6) 9. ¿Qué le resultó útil de su labor con el grupo de trabajo de la red? (por ejemplo, debate sobre metodología, más información y mejor difusión, fortalecimiento del equipo de investigación).**

10. Si Ud. participara en grupos de trabajo futuros, ¿qué sugeriría hacer de modo diferente? (dedicación, agenda específica).

**(7) 11. ¿Qué repercusión ha tenido su participación en el grupo en su institución? (¿Qué nueva experiencia adquirió que transmitirá a otros en su institución; qué información se ha introducido en la cual pueda basarse la institución;).**

Capacidad investigativa:

**(8) 12. ¿Le permite esta oportunidad ayudarle a crear resultados que su institución encontraría difícil de alcanzar a corto plazo dado el presente nivel de recursos humanos y operativos?**

Al finalizar la entrevista:

**Resumiendo, ¿cuál es su evaluación general de la red?, ¿cuáles considera los puntos más fuertes y débiles de la red?, ¿qué propondría para eliminar estos puntos débiles?**

¿Tiene alguna pregunta que hacerme?

Guía para la entrevista: preguntas para directores de instituciones:

Preguntas según la Red de Acuicultura Regional:

Preparación

Me presento; establezco el contexto para el estudio, propósito, cuestiones principales; mi función en relación con el Coordinador de Red del CIID.

Eficacia y eficiencia:

La Red se estableció para resolver problemas comunes experimentados por instituciones en toda América Latina, en tecnología, operaciones y personal. Para lograr estos objetivos, el marco de la Red debía lograr un número de cosas: facilitar el intercambio de información y personal; completar planificación regional y proporcionar capacitación y ayuda técnica.

(1) 1. **Comparando la repercusión de diferentes actividades en las que participa la red, ¿son algunas actividades menos importantes que otras y si es así, ¿por qué?**

(2) 2. **a. ¿Qué tipos de problemas investigativos ha traído a la Red y qué tratamiento se dio a estos?**
**b. ¿Qué tipo de problemas financieros...?**
**c. ¿Qué tipo de problemas administrativos...?**
**d. ¿Se ocupó la red de estos problemas?**

3. ¿Qué efecto ha tenido la Red en la difusión de resultados investigativos comparados con el sistema que existía antes de la Red?

4. Basándose en su experiencia en esta Red y desde el punto de vista de los recursos necesarios, ¿qué consejo daría a otros acerca de establecer una Red con el fin de que ésta funcione? (por ejemplo, ¿necesitan los miembros de la Red compartir áreas comunes de investigación o experimentan problemas comunes?).

Sustentabilidad:

(3) 5. **La financiación externa presenta algunas desventajas tales como las reducciones de presupuesto y el corto plazo de su duración. ¿Piensa que valdría la pena que los miembros financiaran la red? ¿Qué medios alternativos de financiamiento propondría?**

6. ¿Qué ha hecho su institución por la red durante el año pasado? ¿Podría indicar en dólares el monto de este apoyo y/o estimar el tiempo en personas-años de este apoyo? (dé una interpretación financiera; proporcionar conferenciantes para la capacitación, proporcionar participantes para actividades, artículos para el boletín, brindar sus instalaciones para efectuar en ellas actividades de capacitación, proporcionar investigadores en esfuerzos colaborativos).

7. ¿Se produjo en su institución un aumento del trabajo administrativo como consecuencia de la existencia de la Red? Si es así, ¿fueron mayores los beneficios que los costos?

**(4) 8. ¿Aumentó el costo de la capacitación para su institución desde que fuera creada la Red? ¿Por qué aumentó o disminuyó el costo? Si el costo disminuyó, ¿qué es capaz de hacer con los ahorros?**

9. ¿Qué repercusiones tuvieron las actividades de la Red en el reconocimiento regional o nacional de su institución? ¿Cómo se produjo esto?

**(5) 10. ¿Qué papel piensa que deberá desempeñar la Red en los próximos cinco años?**

Contribución a la capacidad investigativa:

11. ¿En qué investigación colaborativa participa su institución tanto dentro como fuera de la Red? ¿Qué tipo de cooperación tiene Ud. fuera de la Red? ¿Es esta cooperación diferente de la cooperación entre instituciones dentro de la Red?

**(6) 12. ¿Hay áreas investigativas que su institución no podría cubrir con sus propios recursos y que se cubren actualmente a través de la colaboración dentro de la Red?**

**(7) 13. ¿Qué efecto ha tenido la red en la formulación de política e implantación de la misma? Si la Red no hubiese existido, ¿habrían sido diferentes algunas decisiones en cuanto a políticas a seguir? ¿Qué ejemplos pueden citarse en los últimos dos años que muestran que las políticas de su gobierno se han visto influenciadas por la participación de su institución en la Red?**

14. ¿Qué repercusiones tienen las actividades actuales dentro de la Red sobre la autonomía de la institución desde el punto de vista de hacerla menos dependiente de los programas del gobierno? ¿Se cumplen algunos objetivos del gobierno a través de la Red?

**(8) 15. ¿Qué repercusión ha tenido la Red en el desarrollo de su institución? ¿Se ha cambiado el programa de su institución desde que fuera creada la Red? Si es así, ¿cómo? (por ejemplo, nivel de capacidad, acceso a información o tecnología, aumento de la reputación en contacto con otras instituciones).**

**Si es posible, indique números para ilustar los cambios, es decir, compare el año transcurrido antes de la Red con el último año, desde el punto de vista siguiente:**

- **# de proyectos emprendidos**
- **# de nuevas áreas en las que se realiza investigación**
- **# de programas de capacitación a los que se asistió**
- **# de integrantes del personal que han participado en la capacitación**

16. ¿Hay indicaciones de que la participación en la Red haya provocado cambios en su institución de alguna manera?

Preguntas relacionadas con el Comité Técnico Consultivo (CTC) y la relación con la Red:

Eficiencia:

17. ¿Hasta que punto las actividades de la red corresponden a los intereses identificados por el comité coordinador?

**(9) 18. Dado que la administración de la red se hace por el Coordinador de la Red, ¿en qué medida beneficia esto al CTC?**

19. ¿Cómo ha contribuido su institución a la agenda del Comité? ¿Cómo define el CTC sus objetivos?

Preguntas según la Red Nacional Colombiana de Acuicultura:

**(10) 20. ¿Qué lecciones obtenidas de la experiencia en la Red regional se aplicaron en la creación de la red local colombiana?**

21. ¿En qué se diferencia la red colombiana de la regional? ¿Qué necesidades suple? ¿Por qué no se podían suplir esas necesidades en el nivel regional?

22. ¿Afecta el Coordinador Regional de la Red la red colombiana? ¿Cómo interaccionan estas dos redes?

Al finalizar la entrevista:

23. ¿Hasta qué punto satisface la red sus intereses? ¿Le está dando la red lo que esperaba obtener de ella?

Guía para entrevistas: Preguntas para el Coordinador Regional de la Red:

Eficiencia

1. ¿Cuál es el objetivo principal que se ha propuesto alcanzar la red? ¿Le ha sido posible a Ud. alcanzar este objetivo? ¿Cuánto tiempo le llevó/en qué fase se encuentra actualmente? ¿Cuánto tiempo más necesitará para alcanzar el objetivo?

2. ¿Correspondió el objetivo a las expectativas de los miembros? ¿Qué necesidades o solicitudes de las instituciones no se están satisfaciendo?

3. ¿Qué problemas ha encontrado la red?

4. ¿Cómo ha cambiado la estructura de la red desde su comienzo? ¿Por qué se logró el cambio?

5. Basado en su experiencia, ¿qué aspecto del establecimiento del programa de la red fue el más difícil? ¿Para tratar esta dificultad, ¿qué consejo daría a otros que se encuentran en el proceso de establecer una red?

6. ¿Lleva Ud. un registro de la participación de cada institución en la red: es decir, número de investigadores que participaron en cada sesión de capacitación; artículos presentados para el boletín; correspondencia entre cada institución y su oficina; etc.

7. ¿Cómo distribuye su tiempo para ocuparse del trabajo de la red? ¿Cómo le gustaría redistribuir su tiempo? ¿Necesitan algunas áreas más atención que otras?

8. El Coordinador de la Red tiene su sede en Colombia. Dada las diferencias geográficas, ¿estaría otra ubicación alternativa de la sede en mejores condiciones de cumplir con los requisitos de coordinación de la red?

Sustentabilidad

9. Idealmente hablando, ¿cuáles, según Ud., serían las tareas de la red en 5 ó 10 años?

10. Suponiendo que el financiamiento del CIID finalice para ese entonces, ¿cómo se podrían apoyar estas actividades? ¿Cree que valdría la pena que los miembros mantuvieran la red? ¿Qué mecanismos de financiamiento alternativos propondría?

Capacidad investigativa

11. ¿Participa cada institución de modo diferente? ¿Podría subrayar la manera en que cada institución contribuye? ¿Contribuyen algunas instituciones más que otras? ¿Qué obtienen como resultado de ésto? Mirando a este patrón, ¿cree que esto cambiará? ¿Funciona este sistema bien?

12. ¿Cuáles son algunas de las ventajas y desventajas de los programas de colaboración existentes entre instituciones en diferentes niveles de desarrollo?

13. ¿Recomendaría Ud. diferentes maneras para que las instituciones participarán de acuerdo con sus puntos fuertes y débiles? ¿Qué ha hecho la red para eliminar estas diferencias?

14. ¿Hasta qué punto ha influenciado la red la agenda o las cuestiones de políticas del gobierno?

15. ¿Cómo presenta la red un plan regional? ¿Sucedería esto sin la red?

16. ¿Por qué se estableció la Red Nacional Colombiana? ¿Qué necesidades no fueron satisfechas en el nivel regional que sí lo serán en el nivel nacional?

17. ¿Cuál es el papel de la red regional comparado con el de la red nacional? ¿Qué relación hay entre estas redes?

18. ¿Es la creación de la Red Nacional Colombiana un reflejo de la imposibilidad de suplir las necesidades a nivel nacional?

Relación con el Comité Técnico Consultivo (CTC)

19. ¿Qué función desempeña el CTC en la red?

20. ¿Cuál es su relación con el CTC?

21. ¿Cómo ve el CTC su papel a largo plazo? ¿Depende este papel de la red de alguna manera?

22. ¿Cómo podrían cambiar las responsabilidades de la red y del CTC en los próximos cinco años?

Al final de la entrevista:

Resumiendo, basándose en su experiencia, ¿qué condiciones son necesarias para que una red tenga éxito?

# Appendix D: PERFORMANCE INDICATOR RETRIEVAL FORM FOR INSTITUTIONS

Questionnaire: To Directors of Institutions

La Red Regional de Acuicultura es un mecanismo de colaboración entre centros de investigación en acuicultura para la planificación, investigación en acuicultura, capacitación, intercambio de información y transferencia de tecnología. This survey seeks your views on what Network activities have been most beneficial to your institution and your insight as to how the Network could be improved. The findings of the survey will be used by Network organizers to identify the strengths and weaknesses of the Network program. It will also be used by IDRC to gain knowledge about the advantages and disadvantages of using the network mechanism to support research for development.

1. Which of the following best describes how the network programs have contributed to your institution's ability to advance its research? (Check one box in each of A and B)

| | A | | B | |
|---|---|---|---|---|
| | Important but easily accessible before network established | Important and not easily accessible before network established | Useful but not critical to continue institution's research | Useful and critical to advance institution's research |
| i. Information in "Boletin Red Acuicultura": | | | | |
| ii. Network publications: | | | | |
| iii. Access to researchers in other institutions with whom our institution collaborates directly: | | | | |
| iv. Range of training provided: | | | | |
| v. Specialized working groups: | | | | |

2. Indicate if any of the following factors limit the participation of researchers in the network-sponsored seminars/training?

| | Yes, this is a limitation | No, this is not a limitation |
|---|---|---|
| i. Financial costs (institution budget limits number of researchers that can participate). | | |
| ii. Human costs (my researchers do not have adequate time to meet present demands, so their time is limited to participate in more activities). | | |
| iii. My staff does not have level of skill or expertise to benefit from seminars/ training provided to date. | | |

iv. Other (please specify): _____
_____
_____
_____

3. Would the following mechanisms to provide training be used widely within your institution, if made available through the network?

| | Yes | No | Not Sure |
|---|---|---|---|
| i. Seminar/training on video. | | | |
| ii. Experienced staff from another institutions seconded on a short term basis to train my staff in an area that is weak. | | | |
| iii. Allowing a member of my staff to provide training at another institution for a short term period. | | | |
| iv. Secondment of my own staff to an institution where expertise exists that is lacking in my institution. | | | |

v. More publications on (specify topic) :_____

vi. New working groups (specify area) _____

_____

_____

vii. Other (please specify): _____

_____

_____

4. Indicate the trend in the dissemination of the following types of information from your institution:

| | Remained constant since network created | Increased since network created | Decreased since network created |
|---|---|---|---|
| i. Correspondence to and from other institutions: | | | |
| ii. Number of technical reports completed: | | | |
| iii. Number of articles submitted for publication: | | | |
| iv. Publications by institution researchers in journals published inside of the country: | | | |
| v. Publications by institution researchers in journals published outside the country but within Latin America region: | | | |
| vi. Publications by institution researchers in journals published outside the Latin America region: | | | |

| | Yes | No |
|---|---|---|
| 5.a. Is there likely to be a need for the Network by 1996? | | |
| 5.b. Should the Network aim to be financially supported by member | | |

6. In your opinion, rate the extent to which the following options offer an opportunity to generate funds for future network activities or to decrease costs to members:

| | A feasible strong option | Might work | Would not work | Not sure if it would work |
|---|---|---|---|---|
| i. Sell final research results to other interested parties located within or outside of Latin America: | | | | |
| ii. Continue funding with present system and with present donors: | | | | |
| iii. Seek funding from other donors: | | | | |
| iv. Charge large and medium scale producers a specified percent of net profits: | | | | |
| v. Other (Specify): _____ | | | | |

**Thank you for your cooperation. Additional information you would like to provide to improve the Network program are welcome. Please provide your comments below, or attach them to this survey.**

# QUESTIONNAIRE: TO BE ANSWERED BY RESEARCHER

Name of Institution: _____

Respondent's Primary Area(s) of Research:

_____

_____

La Red Regional de Acuicultura es un mecanismo de colaboración entre centros de investigación en acuicultura para la planificación, investigación en acuicultura para la planificación, investigación, capacitación, intercambio de información y transferencia de tecnología. This survey seeks your views on the strengths and weakness of the network activities. The findings will be used by Network organizers to make improvements to the Network program.

1. The Regional Aquaculture Network is responsible for a number of activities intended to contribute to aquaculture development in Latin America. Indicate for each network activity the extent to which it assists your institution:

| Network Output | Very useful to my research | Somewhat useful to my research | Not useful to my research |
|---|---|---|---|
| Research reports from other research institutions are: | | | |
| The "Red Acuicultura Boletin" is: | | | |
| Network sponsored training or workshops have been: | | | |
| Participation on one of the following working groups, Cultivo de Collosoma, was: | | | |
| Moluscos, was: | | | |
| Algas, was: | | | |
| Contact with other researchers from institutions in network, but outside of the working | | | |

2.a. The following training/seminars have been sponsored by the network. For those activities you attended please check the appropriate box to indicate the extent the activity was important to your research effort.

| Training/Seminar | Required to further my research | Helpful but not crucial to my research | Did not address to my needs |
|---|---|---|---|

2.b. If training received was not adequate to meet your needs, would the following options remedy this situation?

| | Required to further my research | Helpful but not crucial to my research | Would not address my needs |
|---|---|---|---|
| i. On site research at another institution in Latin America where technique is well used, would be: | | | |
| ii. Purchase of equipment as per equipment used during training, would be: | | | |
| iii. One-on-one training at my institution, adapting technique to the facilities available, would be: | | | |

iv. Other (please specify): _____

3. The following publications/reports are products of the network. How useful was each publication to your research effort?

| Publication | Essential to further my my research | Helpful to further my research | Not helpful to further my research | Did not read |
|---|---|---|---|---|
| | | | | |

4. Are you aware of facilities or staff in another institution, within the network, where a short-term residency would enable you to further your research effort beyond its present level?

yes ___ no ___

If you answered yes:

| | Yes | No |
|---|---|---|
| I have visited the institute on an official visit or secondment. | ___ | ___ |
| I have contacted institute by phone/correspondence. | ___ | ___ |

If you answered no:

| | Yes | No |
|---|---|---|
| Network documents did not provide provide this type of information | ___ | ___ |
| I would be interested to learn more | ___ | ___ |

5. Specify what type of activity or service the network might provide in the future to that would assist your institute to improve its performance:

| | Strongly Agree | Agree | Disagree |
|---|---|---|---|
| i. More training (Please specify area): _____ | | | |

_____

_____

_____

| | Strongly Agree | Agree | Disagree |
|---|---|---|---|
| ii. More working groups (Please specify purpose): _____ | | | |
| iii. Establish links to exchange research results with other areas of world: Asia | | | |
| Africa | | | |
| N. America | | | |
| Europe | | | |
| iv. Collect information on global markets available for fish species from Latin America | | | |
| v. Other:_____ | | | |

**If you were involved in any of the working groups, please complete question 6.**

6. Indicate in which working group(s) you participated:

___ Cultivo Collosoma
___ Moluscos
___ Algas

Based on your experience, indicate the extent to which you agree with each statement below.

a. Compared to the efforts that took place within the Latin America region prior to the establishment of the network, the working group helps this region to conduct and produce research results because:

| | Strongly Agree | Agree | Disagree | Not Sure |
|---|---|---|---|---|
| i. The expertise of the team of researchers does not exist in anyone institution in total, and the working groups provide the appropriate team to address the problem. | | | | |
| ii. Efforts by institutions are not duplicated because we now coordinate our effort in dealing with similar problems. | | | | |

iii. Please specify your personal observation on the impact of the network on the production of research results within Latin America:

_____

_____

_____

b. The following problems are apparent in the Working Group:

| | Strongly Agree | Agree | Disagree |
|---|---|---|---|
| i. Communication between researchers is difficult because the group is too dispersed geographically. | | | |
| ii. The level of skills between institutions is too different and therefore the efforts to produce results is not distributed equally between members. | | | |

| | Strongly Agree | Agree | Disagree |
|---|---|---|---|
| | | | |

iii. Please specify your observations on any problems encountered on the working group:

_____

_____

_____

_____

c. My participation in the working group has resulted in:

| | Strongly Agree | Agree | Disagree |
|---|---|---|---|
| | | | |

i. The time available for me to focus on research that is related to local needs in my country ..... has decreased:
..... has increased:
..... has remained the same:

ii. Please specify your observations on how your participation in the working groups has affected your previous research interests:

_____

_____

_____

_____

_____

**Thank you for your cooperation. Additional information you would like to provide to improve the Network program are welcome. Please provide your comments below, or attach them to this survey.**

# SURVEYS

Institution: _____

**Table I:**

| | 1982 | 1984 | 1986 | 1988 | 1990 |
|---|---|---|---|---|---|
| Number of Researchers | | | | | |
| Total Research Budget ($) of which: | | | | | |
| Operating | | | | | |
| Salaries | | | | | |

Table 2

| | | |
|---|---|---|
| Correspondence[3] to researchers:<br>inside country<br>outside country, in Latin America<br>outside Latin America | October 1984 | October 1990 |
| Telephone/Fax Calls, $ Value:<br>inside country<br>outside country, in Latin America<br>outside Latin America | | |

[3] Correspondence: For a sample of researchers, review chrono files for the month of Oct. 1984 and October 1990. Count the number of letters to other researchers.

Table 3

| | 1984 | 1985 | 1988 | 1989 |
|---|---|---|---|---|
| Number of Training courses Attended[4] by your staff | | | | |
| Number of Staff that Attended Training Courses[5] | | | | |
| Number of Research Articles published[6] by all research staff | | | | |
| Number of Research Articles published in "Boletin Red Acuicultura" | x/ | x/ | | |

**x/ exclude count for this year**

**Other information requested**

From the most recent annual report and from the 1984 annual report, review the list of published titles. Provide the bibliography for 5 articles for each of these years. Attach these bibliographies to this submission. If your institution does not have an annual report, please provide the bibliographies of 5 articles published by your researchers for each of the years 1984 and 1989.

---

[4] Number of Training courses Attended: Count event only one time, even if more than one staff attended.

[5] Number of Staff that attended the Training: Count each staff, each time they attended any training.

[6] Number of Research Articles published: Include articles published both in the "Boletin Red Acuicultura" and other journals/periodicals. Include also reports published by the institution for distribution outside of the institution. Do not include reports produced for distribution within institution only.

# Appendix F: Methodology to Calculate Research Delivery Costs

The two indicators developed take the form of ratios. Three groups of projects implemented between 1980 and 1990 were compared. The projects are linked to Network Project 3-P-86-0144. Insufficient information is available on the later project (3-P-89-0017) to complete such an analysis.

The network project comprises the following IDRC projects:

| | |
|---|---|
| Aquaculture (Brazil) SUDEPE/CEPTA | 76-0001 |
| Mariculture (Chile) Austral University | 83-0200 |
| Invertebrates/Seaweeds (Chile) Catholic University | 85-0069 |
| Scallops (Peru) IMARPE | 85-0272 |
| Chameculture (Ecuador) Fuciencia | 83-0120 |
| Cageculture (Dominican Republic) CIMPA | 81-0218 |
| Mariculture (Panama) Dinacc | 84-0215 |

Three groups of projects were identified. Group A projects are phase I projects which preceded the establishment of the network. Those projects that went on to phase II projects within the network are assigned to Group B. Group C projects were not preceded by an earlier phase, and are also within the network.

The projects are listed below by category:

| Pre- Network | Post- Network | |
|---|---|---|
| Group A | Group B | Group C |
| 80-0107 | 81-0218 | 85-0069 |
| 78-0091 | 76-0001 | 83-0120 |
| 81-0026 | 83-0200 | 84-0215 |
| | 85-0272 | |

Group A and C projects are compared for the "network effect." This comparison assumes that the projects are starting from similar start up points. Given that group B projects are the Phase II component of Group A, this assumption is dropped. It is assumed that Group B projects have a lower cost, given a certain amount of learning has taken place during Phase I.[7]

[7] Group B projects started prior to the creation of the network but were organized within the network for at least half of the project life, once the network came into effect.

The first indicator, the efficiency indicator measures the overall IDRC project cost to deliver a dollar of IDRC research support. Appendix G provides the data for these calculations. The formulas to obtain this ratio are provided below:

**Group A**

$$\frac{\text{All IDRC Actual Contributions (a)}}{\text{\$ of support delivered (b)}}$$

**Groups B and C**

$$\frac{\text{All IDRC Actual Contributions (a)} + \frac{\text{Network Cost (c)}}{\text{no. of projects}}}{\text{\$ of support delivered (b)}}$$

The second indicator, the dissemination-learning indicator, measures the dissemination and learning costs associated with delivering a dollar of IDRC research support. The formula to obtain this ratio are provided below:

**Group A**

$$\frac{\text{IDRC Contribution to Dissemination-Learning (d)}}{\text{\$ of support delivered (b)}}$$

**Groups B and C**

$$\frac{\text{IDRC Contribution to Dissemination-Learning (d)} + \frac{\text{Network Cost (c)}}{\text{no. of projects}}}{\text{\$ of support delivered (b)}}$$

(a) includes the following budget line items *: salaries, support services, capital equipment, conferences, contingency, publications, training and travel

(b) includes the budget line item *: research expenses

(c) the Network costs** were obtained from the FINMIS database. The costs were converted into 1990 Canadian dollars.

(d) includes budget line items *: training, conferences, consultants, publications

* Budget line items were derived using the percentage provided by item in the PINS database. The percentage for each item was multiplied by the actual total payments. The actual total payments figures were provided in the PROMIS database. The PROMIS database does not provide figures by budget line item. A review of the FINMIS database revealed that not all project information matched the PROMIS data, therefore this methodology was used. The figures provided in PROMIS were converted to 1990 Canadian dollars.

** The total network cost, converted to 1990 Canadian dollars is $ 138,108.

The ratios provided are based on four scenarios. Each scenario assumes a different percentage of time that the network mechanism dedicates to only IDRC projects. The assumption is important because the network was set up to link both IDRC-supported and non- IDRC supported research institutes in the aquaculture sector. AFNS can select from the scenarios the scenario which most accurately portrays the network's division of time between IDRC and non-IDRC supported projects.

For both ratios the cost to deliver a dollar of research support is less expensive in the case of projects that operate within a network than in the case of projects that do not operate within a network. The findings are supported in all four cases presented.

The ratios presented reflect the cases below:

- that the network mechanism operates giving 100% of its effort to projects in Groups B and C; in this case the per project network cost is $ 19,730
- that the network mechanism operates giving 75% of its effort to projects in Groups B and C, and 25% of its efforts to other projects/activities; in this case the per project network cost is $ 14,797
- that the network mechanism operates giving 60% of its effort to projects in Groups B and C and 40% of its efforts to other projects/activities; in this case the per project network cost is $ 11,837
- that the network mechanism operates giving 50% of its effort to only projects in Groups B and C and 50% of its efforts to other projects/activities; in this case the per project network cost is $ 9864.

The results are presented below:

**CASE 1: Network contributes 100% of resources to projects in Groups B and C (Average ratio by Group A, B, C, B and C)**

| Indicator | Pre-network | Post-network | | |
|---|---|---|---|---|
| | Group A | Group B Network & learning effect | Group C Network effect only | Groups B & C |
| Efficiency | 6.82 | 1.60 | 1.82 | 1.69 |
| Learning-dissemination | 2.42 | 0.74 | 1.02 | 0.85 |

**CASE 2: Network contributes 75% of resources to projects in Groups B and C (Average ratio by Group A, B, C, B and C)**

| Indicator | Pre-network | Post-network | | |
|---|---|---|---|---|
| | Group A | Group B Network & learning effect | Group C Network effect only | Groups B & C |
| Efficiency | 6.82 | 1.62 | 3.10 | 2.25 |
| Learning-dissemination | 2.42 | 0.52 | 0.92 | 0.69 |

**CASE 3: Network contributes 60% of resources to projects in Groups B and C (Average ratio by Group A, B, C, B and C)**

| Indicator | Pre-network | Post-network | | |
|---|---|---|---|---|
| | Group A | Group B Network & learning effect | Group C Network effect only | Groups B & C |
| Efficiency | 6.82 | 1.52 | 3.03 | 2.17 |
| Learning-dissemination | 2.42 | 0.49 | 0.86 | 0.65 |

**CASE 4: Network contributes 40% of resources to projects in Groups B and C (Average ratio by Group A, B, C, B and C)**

| Indicator | Pre-network | Post-network | | |
|---|---|---|---|---|
| | Group A | Group B Network & learning effect | Group C Network effect only | Groups B & C |
| Efficiency | 6.82 | 1.51 | 2.99 | 2.15 |
| Learning-dissemination | 2.42 | 0.47 | 0.82 | 0.62 |

***Efficiency indicator = all expenses to deliver $1 of research***
***Learning-dissemination indicator = training, consultancies, conferences, publications costs to deliver $1 of research***

# APPENDIX G: Project Information: Group A-C

## Project Information: Group A
(Canadian Dollars)

| Project | 80-0107 (I) | 78-0091 (I) | 81-0026 (I) |
|---|---|---|---|
| IDRC Contribution (Source: Promis) | 221,401 | 102,608 | 134,935 |
| | ('83 $) | ('87 $) | ('83 $) |
| **Converted to 1990 Cdn $s** | 273,937 | 134,236 | 166,953 |
| **1990 $s (%)** | | | |
| **Salaries** | 57,526 (21) | 26,847 (20) | 16,695 (10) |
| **Support Services** | --- | --- | --- |
| **Capital Equipment** | 84,920 (31) | 28,189 (21) | 36,729 (22) |
| **Conferences** | 5,479 ( 2) | 1,342 ( 1) | 10,017 ( 6) |
| **Consultants** | 27,393 (10) | 14,765 (11) | 38,399 (23) |
| **Contingency** | 24,654 ( 9) | 14,765 (11) | 11,686 ( 7) |
| **Publications** | 2,739 ( 1) | 2,684 ( 2) | 5,008 ( 3) |
| **Research** | 35,612 (13) | 14,765 (11) | 25,042 (15) |
| **Training** | 21,915 ( 8) | 24,162 (18) | 15,025 ( 9) |
| **Travel** | 10,957 ( 4) | 6,711 ( 5) | 8,347 ( 5) |
| **CAP Budget** | **76,702** | **77,856** | **70,120** |
| (Source: PINS for %; multiplied by PROMIS Figure) | | | |

## Project Information: Group B
(Canadian Dollars)

| Project | 81-0218 | 76-0001 | 83-0200 | 85-0272 |
|---|---|---|---|---|
| **IDRC Contribution** (Source: Promis) | 240,300 ('86$) | 289,200 ('85$) | 354,330 ('86$) | 230,270 ('88) |
| **Converted to 1990 Cdn $s** | 263,128 | 329,868 | 387,991 | 232,178 |
| **1990 $s (%)** | | | | |
| **Salaries** | 31,575 (12) | --- --- | 108,637 (28) | 39,470 (17) |
| **Support Services** | --- | --- | --- | 2,321 (1) |
| **Capital Equipment** | 107,882 (41) | 62,674 (19) | 89,237 (23) | 60,366 (26) |
| **Conferences** | 7,893 (3) | 6,597 (2) | --- | --- |
| **Consultants** | 23,681 (9) | 32,986 (10) | 23,279 (6) | 23,217 (10) |
| **Contingency** | 2,631 (1) | 659 (.2) | 3,879 (1) | --- |
| **Publications** | 2,631 (1) | 1,649 (.5) | 7,759 (2) | 2,321 (1) |
| **Research** | 71,044 (27) | 174,830 (53) | 139,676 (36) | 95,192 (41) |
| **Training** | 2,631 (1) | 32,986 (10) | 15,519 (4) | --- |
| **Travel** | 13,156 (5) | 19,792 (6) | 3,879 (1) | 11,608 (5) |
| **CAP Budget** | **52,625** | **105,557** | **50,438** | **62,688** |
| (Source: PINS for %; multiplied by PROMIS Figure) | | | | |

## Project Information: Group C
(Canadian Dollars)

| Project | 85-0069 (II | 83-0120 (II) | 84-0215 (II) |
|---|---|---|---|
| **IDRC Contribution** (Source: Promis) | 208,300 ('87) | 176,550 ('87) | 163,570 ('87) |
| **Converted to 1990 Cdn $s** | 218,476 | 185,174 | 171,560 |
| **1990 $s (%)** | | | |
| **Salaries** | 63,358 (29) | 44,441 (24) | 24,018 (14) |
| **Support Services** | --- | --- | --- |
| **Capital Equipment** | 54,619 (25) | --- | 32,596 (19) |
| **Conferences** | --- | 3,703 ( 2) | 6,862 ( 4) |
| **Consultants** | 4,369 ( 2) | 11,110 ( 6) | 8,578 ( 5) |
| **Contingency** | 19,662 ( 9) | 1,851 ( 1) | 15,440 ( 9) |
| **Publications** | 2,184 ( 1) | 5,555 ( 3) | 1,715 ( 1) |
| **Research** | 39,325 (18) | 70,366 (38) | 53,183 (31) |
| **Training** | 8,739 ( 4) | 38,886 (21) | 18,871 (11) |
| **Travel** | 28,401 (13) | 9,258 ( 5) | 10,293 ( 6) |
| **CAP Budget** | **58,988** | **33,331** | **87,495** |

(Source: PINS for %; multiplied by PROMIS Figure)

# Appendix H: Acronyms

AFNS: Agriculture, Food and Nutrition Sciences (A division of IDRC)

CAR: Corporación Autonoma Regional del Cauca, Colombia

CEPTA: Centrao de Pesquisa e Treinamento en Aquicultura, Brazil

Colciencias: Fondo Colombiano de Investigaciones Cientificas y Proyectos Especiales (Colombian Fund for Scientific Research)

CVC: A Colombian regional corporation

CVS: Estación Piscicola de Lorica Corporación Autonoma Regional de Los Valles del Sino y del San Jorge, Colombia

FINMIS: An IDRC database

IDRC: International Development Research Centre

IMARPE:

Inderena: Instituto Nacional de Los Recursos Naturales Renovables y del Ambiente

PINS: An IDRC database

PROMIS: An IDRC database

SIAAL: Information System for Latin American Aquaculture

TCC: Technical Consultative Committee (of the network)

# 8. BIBLIOGRAPHY

Akhtar, S., "Regional Information Networks: Some Lessons from Latin America," Information Development, Vol. 6, No. 1, January 1990, pp. 35-42.

Hernandez, Armando R., "Tecnic, Primer ano de operaciones: Proyecto Aquaculture Development Thrust (Regional) 3-P-89-0017" Bogota, 1990.

Nestel Barry, Hanchanlash Jingjai, Tono Henrique, IDRC Project Networks, Ottawa: International Development Research Centre, 1990.

Office of Planning and Evaluation, IDRC Networks Reference Manual, Ottawa: IDRC, 1990.

Pillay, Thundathil, "Networking as a means of organizing national and regional aquaculture research," in Webster B., Valverde C., Fletcher A., ed., The Impact of Research in National Agricultural Development, The Hague, Netherlands: ISNAR, 1987.

Winkelmann, Donald L., "Networking: Some Impressions from CIMMYT", in Webster, B. Valverde, C. and Fletcher, A. (eds), ISNAR: The Hague, Netherlands, 1987